ABSTRACT: "Mission Rehearsal and Synthetic Training"

William T. Baylis, PhD

[1994-1995 Outstanding Adjunct - Institute for Space Technology, BCC]
[1996, 1997 SOLE Prize Paper Proceedings Award]

It has been apparent, that since the "Cold war" has come to an end that many changes have occurred. Dramatic increases in technology, massive reductions in defense spending and reductions in military forces are occurring constantly. However, the threats that have been in the world have not gone away but have changed. This has resulted in increasing the range of missions that military organizations face, both domestically and internationally. As this range of missions grows more expansive, simulation becomes an important facet of the military structure. Simulation is a way the modern military personnel can gain experience in operations, both wartime and peacetime, which would otherwise be too expensive or impossible to conduct in a strictly live scenario. Interactive simulation can control the behavior and movement of hundreds or thousands of entities (tanks, trucks, airplanes, missiles, personnel, etc.).

This document provides an overview to the early days of mission rehearsal and synthetic training and how it has benefited the training of domestic military forces as well as the training of International or coalition forces in both Multi-Theater Warfare (MTW) and Operations Other Than Warfare (OOTW). This is achieved by looking at the evolution of training simulations, current systems around the world and future systems currently under study.

This document also looks at the architecture needed to construct future simulation systems, future tactical engagements, embedded simulation, modeling human behavior and the idea of integrated seamless simulation systems.

Techniques for the modeling of Military forces have been under development since the early days of computer simulation. This is an evolutionary process. Today, techniques exist for the representation of these forces at both the entity and unit level of representation. The purpose of the simulations is to re-create, as close as possible, human behavior and other real-world variables.

Additionally, this document will look at the concept of Mission Operations in Urban Training (MOUT) addressing the various components that MOUT is comprised of.

Many of the techniques used today do not exhibit the types of human behavior and other variables that allow the computer to generate realistic battlefield factors.

Draft Agenda:

- Mission Rehearsal
- Synthetic Natural Environment
- Simulations
- Developing Simulation Based Training
- Exercise Design and Development
- Virtual Training Environment
- Threat Generator
- Terrain Generator
- Computer Generated Forces
- Haptic Rendering
- Enabling Technologies
- After Action Review
- Environmental Databases
- Individual combatant (IC) Simulation
- Military Operations on Urban Terrain
- Summary

This paper is applicable to Management, Operational, Education, and Defense.

William T. Baylis, PhD 1988 Trevino Circle, Melbourne, FL 32935 Ph (407) 951-6339 Fax (407) 951-6711